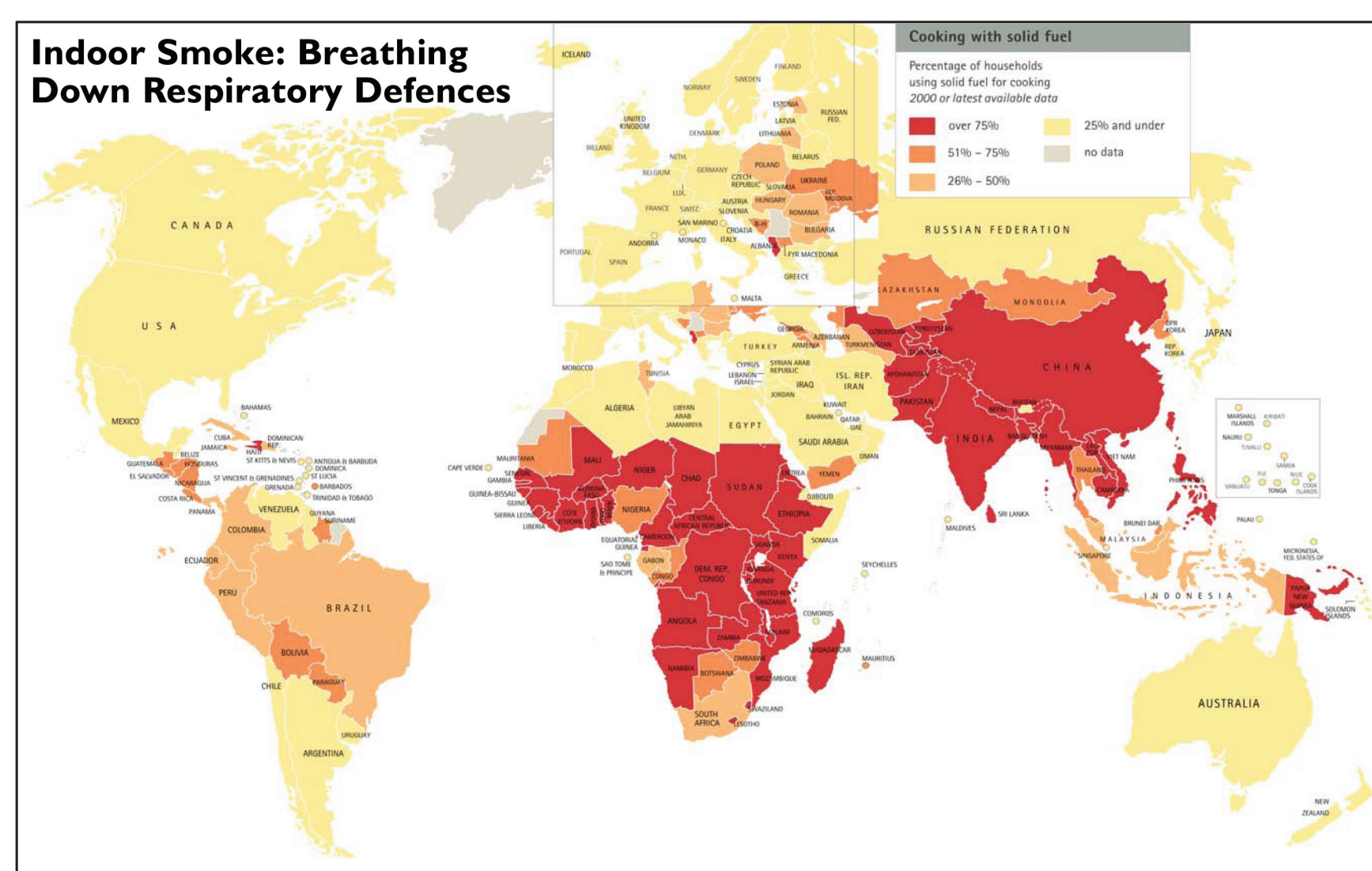


The Partnership for Clean Indoor Air: Reducing Exposure to Indoor Air Pollution (IAP) From Household Energy Use

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Issue:

- ▶ Half the world (3 billion people) burns biomass fuels and coal indoors for cooking and heating.
- ▶ More than 1.6 million people, mainly women and children, die each year from breathing indoor smoke.
- ▶ The number of people using these fuels is expected to rise substantially by 2020.



Source: WHO, *Inheriting the World: the Atlas of Children's Health and the Environment*

The Partnership for Clean Indoor Air (PCIA):

- ▶ Launched at the 2002 World Summit on Sustainable Development.
- ▶ Goal: Increase the use of clean, reliable, affordable, efficient, and safe home cooking and heating practices that reduce exposure to IAP.
- ▶ Over 120 public and private organizations working in 67 countries to improve health, livelihood, and quality of life.



Before



After

EPA-funded Pilot Projects:

- ▶ 10 Pilots in Africa, Asia, and Latin America addressing a range of stoves and fuels and with rural and urban applications.
- ▶ Demonstrate effective approaches for addressing social/cultural norms, producing clean and efficient technologies, developing local markets, and reducing IAP.
- ▶ Results half-way through the two-year grant program include:
 - 815,809 households educated about IAP;
 - 636 new small businesses producing and marketing improved technologies;
 - 58,632 homes adopted improved cooking and/or heating practices; and
 - 237,416 people with reduced exposure to indoor smoke.

IAP Monitoring Pilot Project Examples

Tegucigalpa, Honduras (Grantee: Trees, Water & People)

Purpose:

- ▶ Quantify the effects of improved wood stoves on indoor air quality
- ▶ Compare emissions between stoves produced in the field and in the laboratory
- ▶ Measure emission properties relevant to air quality and climate

Parameters Monitored:

- ▶ Carbon Monoxide (CO)
- ▶ Carbon Dioxide (CO₂)
- ▶ Particle mass
- ▶ Particle chemical composition

Equipment Used:

- ▶ ARACHNE: Ambulatory Real-Time Analyzer for Climate and Health-related Noxious Emissions
 - Real-time CO and CO₂
 - Radiance Research nephelometer and absorption meter
 - Filter samples for chemical analysis
- ▶ 24-hour monitoring package
 - CO and HOBO logger
 - Buck pump with PM filter

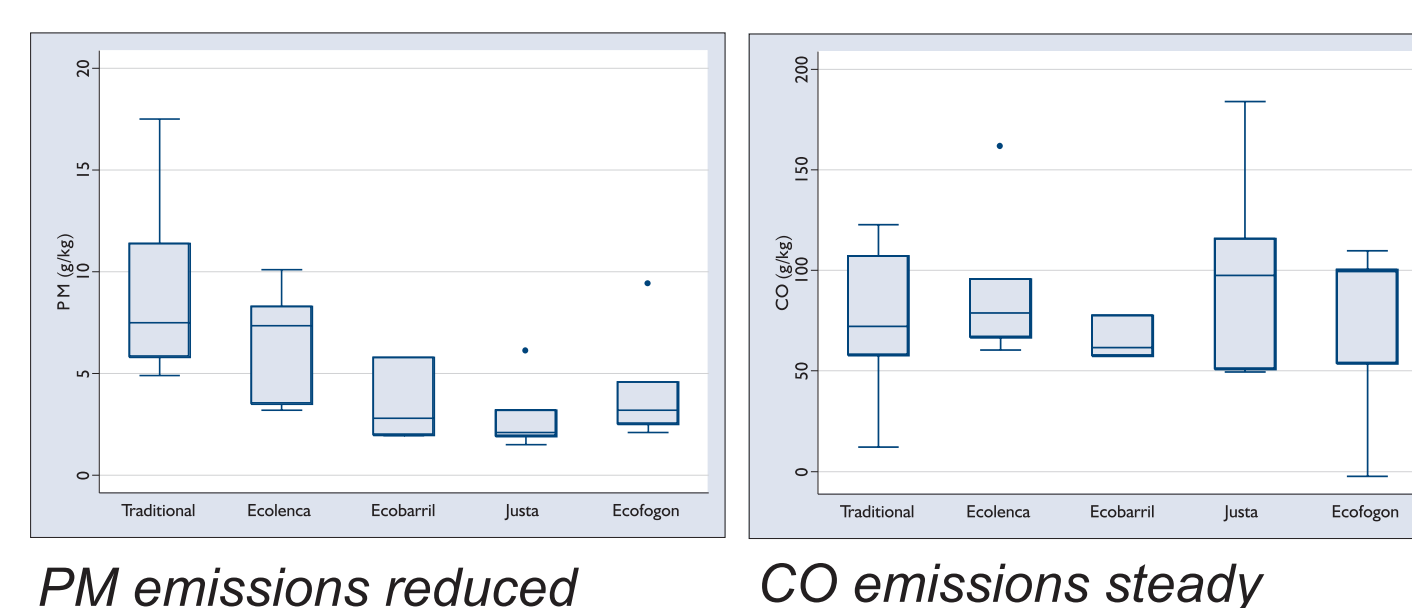
Methodology:

▶ ARACHNE:

- Test 12 homes using traditional stoves
- Test 4 types of improved stoves (each stove was tested in 5 different homes)
- Record all environmental and house conditions
- Measure background pollutants pre- and post test

24 Hour Monitoring:

Monitor 50 homes, equally divided among the improved stoves, before and after installation



PM emissions reduced

CO emissions steady

Yunnan, China (Grantee: The Nature Conservancy China)

Purpose:

- ▶ Evaluate the link between household energy use and IAP
- ▶ Verify the effectiveness of alternative energy installations for IAQ improvement
- ▶ Build awareness of IAP and its health impacts
- ▶ Encourage adopting alternative energies for health and biodiversity conservation

Parameters Monitored:

- ▶ Particulate Matter 2.5 (PM_{2.5})
- ▶ Carbon Monoxide (CO)

Equipment Used:

- ▶ UCB Particle Monitor
- ▶ TSI DUSTTRAK Aerosol Monitor
- ▶ SKC PCXR8 Sample Pump

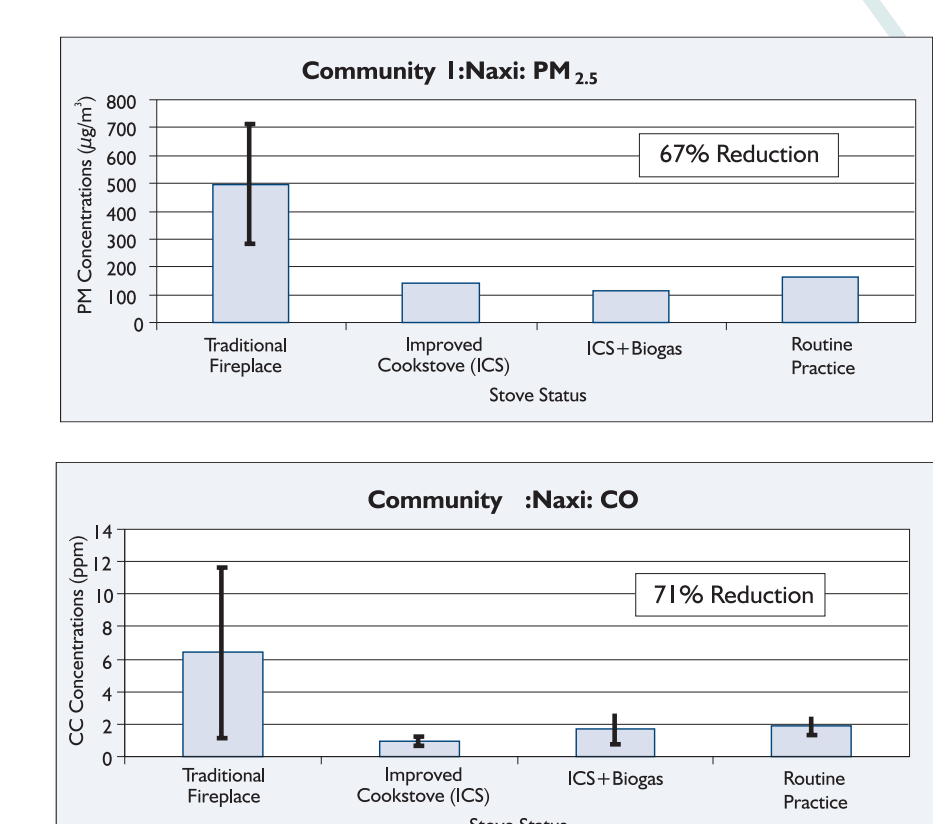


- ▶ HOBO CO Monitor
- ▶ Dräger CO Dosimeter Tube

Methodology:

- ▶ Sample size of 30 households from 5 villages
- ▶ 5 kitchens monitored each day (continuous minute-by-minute over 24 hours)
- ▶ Monitored sequentially:
 - Traditional Stoves
 - Traditional Fireplace
 - Improved Stove
 - Improved Stove + Biogas Stove
 - Improved Stove + Solar Water Heater
 - Multi-intervention

Initial Findings:



For more information on PCIA, visit www.PCIAonline.org.



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